AFLOAT AS A WIRELESS OPERATOR

By RODNEY B. WARE, E.E. 4

We left Port Newark, New Jersey, November 19, 1928, for the west coast via the Panama Canal, and returned February 13, 1929. On June 7, 1928, I had passed the federal examination for Radio Operator, Commercial First Class. This license certifies that the holder is licensed to operate any licensed radio station in the United States and its possessions. Late in October I applied to the Radio Marine Corporation of America, in New York, for a job as a radio operator. On November 18, I received an assignment as only operator on the S.S. "Sucarseco," owned by Transmarine Lines, and the next day we sailed.

The "Sucarseco" was built by the Submarine Boat Corporation of Newport News, and is one of the fleet of fabricated ships built during the World War and later purchased from the government by private interests. She is about 350 feet long, 40 feet beam, 20 feet draft, and is rated at about 6,000 tons; driven by a single turbine and propeller, and manned by a crew of forty men.

The first thing of more than passing interest was the radio equipment itself. Of course, this being my first ship, everything was of interest, but naturally my main concern was the radio department. There was plenty in which to be interested.

There is no way of being absolutely certain that any radio transmitter is working until communication has been established with another station. With a makeshift antenna I had been able to test the receiver before leaving, and had tested the transmitter as far as possible.

I decided to call up WNY and ask if he had any traffic for me, knowing very well that he had none, but just to see if I could establish contact. So I sent out my first call, and waited with some curiosity to see if WNY would answer me. WNY came back immediately, said he had nothing for me, and added I was using too much power. I tapped the key twice to show that I understood, realizing that every ship within a hundred miles knew that another green radio operator was leaving port. I had opened up on full power, 2 kilowatts, and WNY hardly twenty miles away in Brooklyn.

I was now assured that the set was working, and began to go over the transmitter for loose connections. There were plenty of loose connections, and some of the parts were rather inaccessible. This seems uninteresting, perhaps, on paper, but when alone at sea the matter of loose connections is, and should be, of great importance, as will appear later.

The transmitter was a 2 kilowatt, quenched spark, fed by a Crocker-Wheeler 500 cycle motor-generator. The motor-generator is ordinarily run from one of a pair of small steam engines in the engine room. On this ship both of these generators had defective governors, and hence could not be subjected to a varying load such as would be applied by the transmitter. It was, therefore, necessary to run the set on the emergency storage batteries. The batteries could be charged by the engine-room generators because the charging load is a constant load, requiring no attention at the throttle of the steam engines. The batteries were of the 250 ampere-hour type, and were always placed on charge after a period of operating. The motor-generator was placed on the engine-room grating, where its noise would not interfere with the reception of messages.

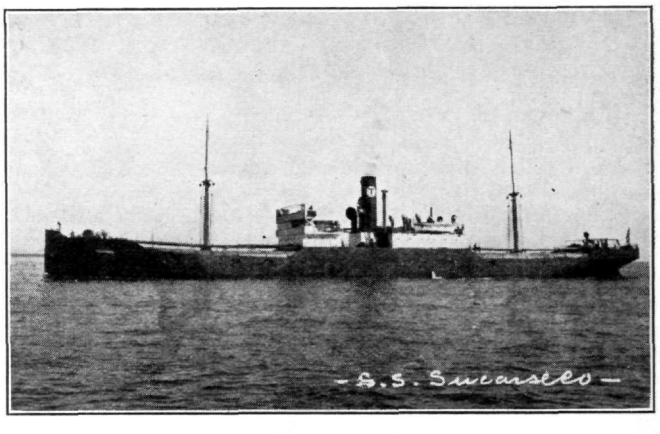
The transmitter had three wave-lengths, at 600, 700, and 800 meters. The 600 meter transmitter was for ordinary calling and SOS purposes, the 700 channel was for traffic, and the 800 channel was for radio bearings and direction finding.

I had been so intensely interested in the equipment, and in getting the "shack," as the radio room is known, into shape that everything else was forgotten. Upon my first return to "consciousness," I became aware that I was getting seasick. I had never been seasick before, but I knew it instantly, now. My interest in anything immediately dropped to zero, as did my activity. We had sailed about 2 P. M. and at 4 P. M. the tugs left us in the lower bay of New York Harbor, and by 7 P. M. we were well at sea and some distance down the coast, and I was discovering that a good cure for *mal de mer* is to lie on one's stomach, thus reducing what the medics call peristaltic movement.

This simple procedure proved so effective that I was able to eat supper, and by returning immediately to the prone position was able to keep it down.

That evening I obtained my first set of bearings, for the captain. The advent of radio has, as is generally known, been a wonderful aid to navigation, but not so much is known about why this is so. There is, of course, the SOS and the usual means of direct ship-to-shore, and ship-to-ship communication, which is extremely valuable. Perhaps the greatest aid to navigation is the broadcasting of the weather forecasts, the time signals, and the facilities for finding direction by radio. Regular weather forecasts, prepared by the U. S. Weather Bureau, are broadcast at cer-

(Continued on Page 22)



S.S. "Sucarseco"

AFLOAT AS A WIRELESS OPERATOR

(Continued from Page 10)

tain times of day; and any special weather notices, such as hurricane warnings, are sent out immediately on the 600 and other channels by all radio stations along the coast. The time signals are also broadcast at noon, and at 10 P. M. These signals are important because time is an important factor in making observations by sextant. I was told that an error of four seconds in the time of the observation means an error of one mile in the ship's position.

A receiver connected to a loop aerial receives the strongest signals when the loop is pointing at the source of these signals, and when the loop is broadside to the source, the signal strength drops to almost zero. Thus a receiving station on shore could determine the direction from which the signals of a given ship station were coming. One could plot on a chart a line passing through the location of the shore station and the ship. This would obviously not determine how far distant is the source of signals. But suppose that instead of one receiver we were to have two receivers placed, say, thirty miles apart, and each receiving signals from the ship. Each station determines the direction from which the ship's signals are coming, with North as a reference, and then sends its observations to the ship. The captain then plots on his chart, a line through each of the shore stations according to the directions sent him. Where these two lines cross on the chart is the position of the ship. In this way the captain can be sure of his course in the thickest fog, or at night. This traffic is all executed in the 800-meter channel, and the service is furnished free of charge by navy stations, at all hours of the day, along our coasts and in the Canal Zone. Other countries have a similar service.

At 9:20 P. M. on November 21, 55 miles southeast of Cape Henry, we were struck by the SS. "Toluma" of the Grace Line. This was in the neighborhood of the Vestris disaster and only a few days after. It was a clear moonlight night. At the time I was practicing my cure for seasickness and gazing aft from the window of my bunk room in the shack. The shack was located on the hurricane deck, so I had a clear view of the events. Seasickness was completely forgotten as the force of the blow tossed me out of my bunk, and I ran into the radio room. The sea was rough and the "Toluma" continued to scrape her nose up and down on our starboard side as she

(Continued on Page 24)

AFLOAT AS A WIRELESS OPERATOR

(Continued from Page 22)

fell off astern. The noise of scraping, bending steel made the ship sound like an enormous dish-pan dropped upon the floor. One thing saved us—the fact that the ship had a slight list toward the side on which we were struck. This resulted in our receiving the greatest force of the blow above the water line. Had the list been in the opposite direction, or had we been struck on the other side we should have been burst open below the water line. The "Toluma" had to put in to Norfolk, Virginia, immediately with a badly damaged bow.

I had no trouble communicating with the "Toluma," and the captains exchanged radiograms, requiring no assistance from each other. At about five miles distance, and while her lights were still visible, I attempted to call the "Toluma" again. No response. I glanced at the antenna-meter and pressed the key. The needle barely moved. I was on low power, so I shifted to full power and tried again. There was practically no current in the antenna. I shifted to 700 meters and tried again. All right there and on 800 meters. I worked until 5 A. M. trying to trace out the trouble on 600 meters, and finally found, in an almost inaccessible corner, one loose connection which had been jarred clear off and prevented current from flowing into the antenna. My previous communications must have been obtained by radiation from the oscillation transformer alone. I managed to get the captain's report to the owners off on the 700-meter channel.

The blow had apparently opened none of the plates below the water line because we were making no water. Therefore we continued on our way to the Canal. At the Canal we had a hull survey and were declared fit to make the remainder of the trip to Wilmington and San Francisco.

We unloaded our cargo of iron pipe at Wilmington and continued on up to San Francisco. Here we went into dry-dock for repairs. When the entire ship was out of water, the effects of our collision could be seen more clearly. There was a crease the whole depth of the ship, showing that at least some of the blow had been received below the water line. The damaged plates were removed and some other repairs made on the hull, and the whole ship repainted. This meant work for everyone but the captain and the radio operator. The three weeks that were consumed while we lay in dry-dock, which included Christmas and New Year's, I spent in seeing the sights around that part of California. Not the least of these was the East-West Stars football game in which our own Raskowski played.

Tunnel Hill, a story of life in the Kentucky wilds, is the latest product of the pen of Professor Harlan Hatcher of the English Department.

Do you suppose that General Pershing's *My Experiences in the World War,* recently published, could have been the cause of all the anti-military uproar on the campus? It is an interesting book and certainly tells us a lot that we didn't know before about the circumstances surrounding the entry of the United States into the War.